



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

*Col*

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,009	04/04/2001	Sabah Badri	3104	1361
7590	05/13/2005			EXAMINER
Dougherty, Clements & Hofer The Roxborough Building 1901 Roxborough Road Suite 300 Charlotte, NC 28211			BURD, KEVIN MICHAEL	
			ART UNIT	PAPER NUMBER
			2631	
DATE MAILED: 05/13/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/763,009	BADRI ET AL.	
	Examiner	Art Unit	
	Kevin M. Burd	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 26 January 2004.  
 2a) This action is FINAL. 2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-37 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-3,7,8,11,12,20-22 and 30 is/are rejected.  
 7) Claim(s) 4-6,9,10,13-19,23-29 and 31-37 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 04 April 2001 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>2/01;4/01;1/04</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

***Information Disclosure Statement***

1. The information disclosure statements filed 2/13/2001 and 4/6/2001 fail to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because no English translation has been provided for references DE 195 32 959; DE 3785670 and "Probleme der Mobilfunkubertragung" by Kammeryer in the IDS filed 2/13/2001 nor "Probleme der Mobilfunkubertragung" by Kammeryer in the IDS filed 4/6/2001. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).
2. The information disclosure statement (IDS) submitted on 1/26/2004 is being considered by the examiner.

***Drawings***

3. Figures 3 and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct

any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

4. Claims 4-6, 9, 10, 15, 19 and 23-29 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend on another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

5. Claims 2, 7, 8, 11-14, 16-18 and 31-34 objected to because of the following informalities: In claim 2, line 17, the term "transmittiog" is stated and should be corrected. Claims 7 and 8 are objected due to dependence on claim 2. In claim 11, line 14, the term "rfeceived" is stated and should be corrected. Claims 12-14 and 16-18 are objected to due to dependence on claim 11. In claim 31, line 5, the term "eath" is stated and should be corrected. Claims 32-34 are objected due to dependence on claim 31. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3, 11, 12, 20-22 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanzaki et al (US 5,652,764) in view of Games et al (US 3,755,628).

Regarding claims 1, 20 and 22, Kanzaki discloses a method and apparatus for transmitting information symbols using a plurality of carriers. The transmitter is shown in figure 1. Transmission data is combined with an orthogonal code 1 in mixer 21. The new information symbols are shown in figure 4(d). Transmission data is also combined with orthogonal code 2 in mixer 22. The new information symbols are shown in figure 4(e). These figures show the transmission codes 1 and 2 are generated from the same transmission data (figure 4(a)). The transmission codes 1 and 2 are modulated by BPSK modulators 51 and 52 (figure 1 and column 4, lines 8-15). Kanzaki does not disclose modulating the transmission codes at different times. Games discloses the advantages of time diversity (transmitting signals at different times). Games states, in column 4, line 56 to column 5, line 23, transmitting signals at different times provides a measure of reliability which is orders of magnitude greater than simple redundancy. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the time diversity system of Games into the communication method of Kanzaki.

Regarding claims 3 and 21, figure 10 of Kanzaki shows using different oscillators for each transmission.

Regarding claims 11, 12 and 30, Kanzaki discloses a method of receiving a signal as shown in figure 11. The receiver demodulates a first carrier in mixer 110. The demodulated signal is stored in matched filter 131 and forwarded to adder 145. A mixer

111 demodulates a second carrier. This demodulated signal is stored in matched filter 132 and forwarded to adder 145. The adder 145 and decider 150 recover the original information symbol (column 6, lines 53-57). Kanzaki does not disclose modulating the transmission codes at different times. Games discloses the advantages of time diversity (transmitting signals at different times). Games states, in column 4, line 56 to column 5, line 23, transmitting signals at different times provides a measure of reliability which is orders of magnitude greater than simple redundancy. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the time diversity system of Games into the communication method of Kanzaki.

7. Claims 2, 3, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanzaki et al (US 5,652,764) in view of Games et al (US 3,755,628) further in view of Herzberg et al (US 5,881,108).

Regarding claims 2, 7 and 8, Kanzaki discloses a method and apparatus for transmitting information symbols using a plurality of carriers. The transmitter is shown in figure 1. Transmission data is combined with an orthogonal code 1 in mixer 21. The new information symbols are shown in figure 4(d). Transmission data is also combined with orthogonal code 2 in mixer 22. The new information symbols are shown in figure 4(e). These figures show the transmission codes 1 and 2 are generated from the same transmission data (figure 4(a)). The transmission codes 1 and 2 are modulated by BPSK modulators 51 and 52 (figure 1 and column 4, lines 8-15). Kanzaki does not disclose modulating the transmission codes at different times. Games discloses the

advantages of time diversity (transmitting signals at different times). Games states, in column 4, line 56 to column 5, line 23, transmitting signals at different times provides a measure of reliability which is orders of magnitude greater than simple redundancy. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the time diversity system of Games into the communication method of Kanzaki. The combination of Kanzaki and Games does not disclose generating a difference between the new information symbols and an information symbol preceding the first new information symbol in time. However, it is well known in the art to use pre-equalization with modulo arithmetic in the transmitter in order to mitigate, if not eliminate, the problem of error propagation in the receiver (column 1, lines 22-27). This is done by utilizing Tomlinson filtering (or precoding) as shown in figure 2. The preceding symbol is subtracted from the present symbol as shown in the figure. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the precoding of Herzberg in the communication system of the combination of Kanzaki and Games for the reason stated above.

Regarding claim 3, figure 10 of Kanzaki shows using different oscillators for each transmission.

#### ***Allowable Subject Matter***

Claims 13, 14, 16-18 and 31-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd  
5/11/05

**KEVIN BURD  
PRIMARY EXAMINER**